ROUTLEDGE FOCUS

COVID-19 AND PSYCHOLOGY IN MALAYSIA

Psychosocial Effects, Coping, and Resilience

Edited by
D. Gerard Joseph Louis,
Surinderpal Kaur,
and Huey Fen Cheong

ROUTLEDGE Focus

"We have learned so much about the viral pandemic's social and psychological consequences in the major global research hubs, but we do not know much about how the countries in the peripheries of these hubs have experienced and responded to the pandemic. In *COVID-19 and Psychology in Malaysia: Psychosocial Effects, Coping, and Resilience*, we are provided a thoughtful entry point for exploring the socio-psychological experiences of Malaysians during the pandemic. The various chapters provide snapshots in different domains of Malaysia society that point to some convergences with universal pandemic experiences and to how some specific sociocultural practices characterize aspects of Malaysian's COVID-19 pandemic experiences. There is so much to learn from this volume."

Professor Allan B. Bernardo,
Distinguished University Professor and University Fellow,
De La Salle University Manila,
Former President, ASEAN Regional Union of Psychological Societies

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COVID-19 and Psychology in Malaysia

Part of a mini series of Focus books on COVID-19 in Malaysia, the chapters in this book address the psychosocial impact on the pandemic and ways in which people have learned to develop the ability to be more resilient despite the challenges of living and working during this public health crisis.

Covering a range of topics including life under lockdown, working on the frontlines, and the rapid adaptation to online teaching, the contributors highlight the pervasiveness of the pandemic on Malaysian society, identified factors that potentially increase the psychosocial impact of the pandemic on different segments of the population and how Malaysians have found ways to cope throughout this period. This is an opportunity to witness how researchers from multiple disciplines can join forces during challenging times. There are a great many lessons to be learned from the successes and failures in responding to the pandemic and the measures that have been necessary to contain it.

A fascinating read for scholars with an interest in crisis management in non-Western contexts, especially those with a particular interest in Malaysia, or Southeast Asia more generally.

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Preface

The World Health Organization (March 18, 2020) declared COVID-19 a global public health crisis. While a lot of the focus over the last year has been dealing with the physical health effects of the COVID-19 pandemic that has since ravaged communities globally, a more subtle but parallel mental health crisis, has also been developing. From educators and their students and retrenched workers to frontline medical workers and vulnerable members of the community (like the elderly or women), it is unsurprising to read reports of people from all walks of life experiencing feelings of fear and distress, arising from the new way of living and uncertainties brought about by COVID-19.

This book, entitled "*COVID-19 and Psychology in Malaysia: Psychosocial Effects, Coping, and Resilience*", addresses the psychological impact of the COVID-19 pandemic in Malaysia. This book covers three key areas of focus, namely: (a) the experience of working during the pandemic, (b) predictors of mental health and distress and (c) developing resilience during the pandemic. Taken together, this book presents a composite picture of the psychosocial effects of the pandemic in Malaysia across a wide spectrum of everyday normal human activities. It also examines a range of factors that contribute towards mental health and elevated levels of distress in individuals and specific groups of people. Finally, it discusses factors that can help people cope with the uncertainties of this period and develop a higher level of resilience in times of distress and crisis. The chapters in this book present studies carried out between May 2020 to January 2021. They analysed the psychological impact during the various phases of the Movement Control Order (MCO), from the first MCO in March 2020 to the start of 2021. The MCO was enacted by the Malaysian Government to minimise social gatherings, in order to prevent the spread of the COVID-19 virus.

Section I, *Working during the pandemic,* features investigations of those working in essential and non-essential services in the early months of the

pandemic and presents a snapshot of the prevalence and source of psychological distress of these workers during this period.

In Chapter 1, *Psychological distress among healthcare professionals at the frontlines—Anaesthesiologists' perspective,* Samuel Ern Hung Tsan from Universiti Malaysia Sarawak, Anand Kamalanathan from Sungai Buloh Hospital and Chew Yin Wang from Universiti Malaya discuss the prevalence of burnout and self-perceived medical errors committed by critical frontline healthcare professionals, specifically Anaesthesiologists, who worked at a designated COVID-19 hospital. While there were elevated levels of burnout, depression risks and medical errors committed during the period of assessment, burnout and depression risks were not significantly related to medical errors. They were, however, able to show that depression and burnout were significantly related to each other. The authors suggest that the high prevalence of psychological distress (i.e. burnout and depression risks) among critical frontline health workers indicates a parallel pandemic, which needs to be addressed, not only at the individual level, but also at the organisational, national and international levels, given that COVID-19 is a global pandemic. Recommendations for psychoeducational programmes for individuals to organisational support and community mental health programmes are discussed.

In Chapter 2, *Psychological distress among essential and non-essential service workers*, Marc Archer from HELP University and Chee Hoong Moey from Selayang Hospital, explore psychological distress (namely, the rates of depression and anxiety), among both essential and non-essential frontline workers in the early stages of the COVID-19 pandemic in Malaysia. Contrary to previous studies, this study showed that workers in both essential and non-essential services showed elevated levels of psychological distress across the workforce. The key reason for this is the uncertainty surrounding the progress of the pandemic. To mitigate this sense of uncertainty, the authors suggest the need for employers to be mindful of the role that uncertainty plays in psychological distress and to increase their efforts to strengthen processes in their operations, which provide as much certainty and stability as possible in their communications with their workers. Finally, specific pandemic-related concerns, such as close *contact with positive cases* and *the lack of time with family*, were shown to be linked to higher levels of anxiety, which should be noted, but with the latter requiring further investigation.

Section II, *Predictors of distress and mental health,* explores psychological and socio-demographic indicators, which may provide insights into why certain people in our population are more vulnerable to distress and mental health issues.

In Chapter 3, *Psychosocial and demographic predictors of mental health and distress*, Hasse De Meyer, Farihin Ufiya and Siew Li Ng—all of whom are from HELP University (with Hasse also affiliated with KU Leuven, Belgium)—investigate what aspects of Malaysia's unique demographic makeup and socioeconomic environment contribute towards mental health and distress during this particularly challenging period. Younger age, female, lower income (less than RM 2000), presence of a chronic illness and psychiatric history, and employment status were associated with poorer mental health outcomes. In addition, increased social media use, becoming unemployed, experiencing limited social support and feeling lonely were key factors that were associated with depressive and anxiety symptoms. The authors make a comparison of their findings with those of some western countries (e.g. Belgium, the United Kingdom and Italy) and highlight unique features in collectivist societies like Malaysia, which contribute towards lower mental health outcomes. Recommendations to improve mental health interventions, which are culturally sensitive, easily accessible and financially affordable, are discussed.

In Chapter 4, *Women's emotional health and support in a time of crisis*, Vimala Balakrishnan, Kee Seong Ng and Azmawaty Mohamad Nor, all of whom are from the Universiti Malaya, discuss the sociodemographic factors that predict both emotional distress and the need for emotional support among women. (*Note: Women are considered to be a particularly vulnerable group due to an increase in reports of gender-based violence during this pandemic period.*) The authors revealed that just over a third of their sample experienced some level of emotional distress, from mild to severe. Demographic factors, such as younger age (younger women) and decreased household income, are the key predictors of higher levels of distress. Women with lower income and lower level of education were also deemed to be in a greater need of social support from others. Interestingly, the majority of women in the study were found to be quite resilient, as they managed their distress on their own or with their family members only. Education was a key factor in explaining this outcome, as more than 90% of the women in this study had at least a university degree.

Section III, *Developing resilience during the pandemic,* highlights the mediating role of resilience in emotion regulation and well-being as well as identifies factors and coping strategies, which contribute to the development of resilience.

In Chapter 5, *Psychological impact and the use of religious coping among Malaysian Catholic older adults*, D. Gerard Joseph Louis from HELP University, Clarence Devadass from the Catholic Research Center, Melissa Shamini Perry, from the National University of Malaysia, Pauline Pooi Yin Leong and Yuen Beng Lee, both from Sunway University explore how the

curtailing of physical religious activities during the pandemic impacted the psychological well-being of a group of Catholic older adults in Malaysia. There were concerns regarding how the sudden move to online religious activities would impact this group that is normally not technologically savvy and who rely on meaningful faith-based interactions in the community for their spiritual and psychological well-being. While common themes such as fear, anxiety, stress, feelings of isolation and anger were echoed, this group used positive religious coping strategies to deal with the initial setbacks in the practice of their faith. This helped them become more optimistic, flexible and empathetic towards others. The study discusses the link between positive religious coping strategies and better mental health outcomes when dealing with stressful life events.

In Chapter 6, *Factors promoting university instructor's resilience to technostress,* Chia Keat Yap from Asia Pacific University of Technology and Innovation and Si Na Kew from Universiti Technologi Malaysia process the impact of a heavily computer-mediated educational setting due to the transition of online learning in all educational institutions for a long period during the pandemic. They discuss a concept called 'technostress', which is measured by techno-load, techno-invasion, and techno-complexity on well-being. They also introduce how computer self-efficacy and positive self-esteem are resilience factors that mitigate against technostress. Improving contextual resilience factors and trait-like factors that enhance personal ability are practical measures recommended to buffer against technostress.

In Chapter 7, *The relationship between emotion regulation and well-being during the pandemic: Resilience as a mediator*, Nurul Izzah Fathiah binti Wan Ali Munawar and Eugene Y.J. Tee, both from HELP University, look at the mediating role of resilience in the relationship between emotion regulation strategies and well-being. Two emotion regulation strategies were explored, namely cognitive reappraisal and suppression. Resilience fully explained the relationship between reappraisal and well-being, but did not act as a mediator between suppression and well-being. In addition, while suppression as an emotion regulation strategy may provide some relief in the short term, unresolved emotions may have an impact on the well-being of a person in the longer term. Cognitive reappraisal, on the other hand, led to the development of resilience and an increased sense of well-being in a person. Cognitive reappraisal as an emotion regulation strategy was especially useful in periods of adversity and is recommended over the use of suppression during such times.

Acknowledgements

The editors of this book would like to acknowledge the fine work done by the authors of different chapters in this book. The insights into the psychological impact of COVID-19 in Malaysia will help policy makers and mental health practitioners to craft out strategies that will aid in the healing process of individuals and communities. Additional appreciation to a few authors, who also volunteered their time and effort as peer reviewers for other chapters in the book, namely Si Na Kew, Samuel Ern Hung Tsan, Azmawaty Mohamad Nor, Siew Li Ng, Hasse De Meyer, Pauline Pooi Yin Leong, Eugene Y.J. Tee and Chia Keat Yap. A special word of thanks also to peer reviewers from outside of this book project. They are academic scholars from the Department of Psychology at HELP University (Christopher Jit Meng Tan, Ai Hwa Quek, Timothy Tze Hao Liew, Elaine Fernandez, Karuna S. Thomas, TamilSelvan Ramis, Ho Yan Lai and Maria Felicitas Mamauag) and also from other institutions (Roy Rillera Marzo, Cynthia Shoba Anthony Thanaraj and Carlo Magno).

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Section I

Working during the pandemic

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1 Psychological distress among healthcare professionals at the frontlines

Anaesthesiologists' perspective

Samuel Ern Hung Tsan, Anand Kamalanathan, & Chew Yin Wang

1.1 Introduction

Amidst the COVID-19 pandemic, worldwide data indicated healthcare practitioners have a high incidence and prevalence of suffering from depression, burnout and anxiety, with multiple adverse consequences, such that it can be considered a "parallel pandemic" among healthcare workers. Burnout syndrome (BOS) is defined by the World Health Organization International Classification of Disease 11 (ICD 11) as a syndrome resulting from poorly managed chronic workplace stress (World Health Organization, 2019), while depression is defined as the presence of depressed mood or loss of interest in almost all activities in the ICD 11 (World Health Organization, 2020).

The prevalence of burnout and depression among healthcare practitioners in Malaysia has never been studied during a pandemic prior to this study. In the midst of the COVID-19 pandemic, this question has again been pushed into the forefront, due to concerns with maintaining the physical and mental wellbeing of clinicians handling this pandemic. At the same time, there is also no data on the factors associated with psychological distress among Malaysian medical workers, which is not desirable when planning for preventative strategies in alleviating their psychological distress. To answer these questions, we set forth to capture a snapshot of the situation in Malaysia with regards to burnout and depression among frontline anaesthesiology clinicians working in Sungai Buloh Hospital, the national infectious disease centre of Malaysia and the hospital gazetted to be an exclusive COVID-19 hospital in Malaysia.

With this study, more insight will be obtained into the psychological challenge that is faced by healthcare workers during pandemics by putting

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the spotlight on the prevalence of burnout and depression. Also, by investigating the factors associated with burnout and depression, specific preventative strategies can be designed to improve the working conditions of Malaysian healthcare workers. Part of the data from our survey has been published as a correspondence article in the journal *Anaesthesia* (Tsan et al., 2020).

1.2 Literature review

The field of anaesthesiology and critical care has been specifically selected to be the target of the survey. This is due to the nature of work of anaesthesiologists in Malaysia, who handle the sickest patients in the intensive care unit (ICU) of the hospital. With regards to the pandemic, anaesthesiologists would be managing COVID-19 patients requiring airway management, life support equipment and medications, necessitating critical care in the ICU. Hence, they represent one of the groups of frontline healthcare practitioners most likely to suffer from burnout and depression.

1.2.1 Mental health in the field of anaesthesiology and critical care

The field of anaesthesiology and critical care is fraught with work-related psychological stress, where healthcare providers are faced with challenging ethical dilemmas, demanding daily responsibilities and high rate of patient mortality. In the midst of this work environment, the burnout syndrome (BOS) can occur (WHO, 2019). Multiple studies performed among anaesthesiologists and anaesthesia residents demonstrated that the prevalence of BOS working in such environments can be between 41% and 51% (de Oliveira et al., 2013; Sanfilippo et al., 2017; Sun et al., 2019). Similarly, critical care physicians are at increased risk of BOS, with studies showing a prevalence of 44% to 46.5% (Kerlin et al., 2020). This is a matter of great concern as BOS can cause posttraumatic stress disorder, alcohol abuse and even suicidal ideation (Dyrbye et al., 2008; Kerlin et al., 2020).

Research has shown that clinicians at all stages of their careers exhibit a higher level of depression than the general population. Prevalence of depression has been shown to be up to 60% in practicing clinicians (Bailey et al., 2018). In the field of anaesthesiology, trainees demonstrated high rates of depression, ranging from 12% to 18% (Looseley et al., 2019; Sun et al., 2019), while for anaesthesiologists up to 62.1% have been found to have depressive symptoms (Zhang, 2013). Similarly in the intensive care unit, physicians are at high risk of depression, with reported prevalence rate ranging from 18.8% to 23.8% (Embriaco et al., 2012; Garrouste-Orgeas et al., 2015). Aside from multiple adverse impacts on the emotional and physical health of clinicians, there could be implications for the

safety of the practice of anaesthesiology and critical care, as depression has been found to be an independent risk factor for medical errors (Garrouste-Orgeas et al., 2015). In addition, anaesthesiology clinicians with higher burnout and depression risk are associated with less adherence to safety and practice standards (de Oliveira et al., 2013).

The phenomenon of burnout and depression among anaesthesiology clinicians is even more concerning in light of the current pandemic, which has led to increased workloads and stress for anaesthesiologists worldwide. In addition, the psychological pressure associated with increased risks of transmission of infections to clinicians may also contribute to risk of burnout and depression. A recent study on healthcare workers involving physicians and nurses who were exposed to COVID-19 patients in China showed that 50.4% of participants reported symptoms of depression, 44.6% had anxiety, 34.0% had insomnia and 71.5% reported distress (Lai et al., 2020). This is especially true for clinicians in the anaesthesiology field, who are currently serving on the front lines of the pandemic.

Prior to our survey being carried out, there was no data in the literature documenting the prevalence of burnout and depression among anaesthesiologists amidst the COVID-19 pandemic. This study was the first to bring to light this very important issue in Malaysia.

1.3 Methods

1.3.1 Participants

This study was approved by the Medical Research Ethics Committee of the Ministry of Health Malaysia. Throughout the whole month of May 2020, we conducted a cross-sectional survey of all clinicians ($n = 88$) in the Anaesthesiology and Intensive Care Department of Sungai Buloh Hospital (Tsan et al., 2020), which has been nationally gazetted as an exclusive COVID-19 hospital in Malaysia (Ram, 9 March 2020). All anaesthesiologists and anaesthesiology medical officers were eligible to participate, with the exception of those who refused to participate, or those who had been in the department for less than 1 month. All responses were anonymous and kept confidential. Written informed consent was obtained from subjects prior to participation in the survey. This study was prospectively registered on the Clinicaltrials.gov registry (Clinicaltrials.gov Identifier: NCT04362319).

1.3.2 Study measures

The study questionnaire consisted of 38 items, including demographics, social characteristics, working characteristics, burnout, symptoms of

depression, self-perceived medical errors and worry of COVID-19 transmission. The survey was given by hand and collected in person after completion.

1.3.2.1 Burnout

Burnout was assessed with the physician-validated Maslach Burnout Inventory Human Services Survey (Medical Personnel) [MBI-HSS(MP)] (Maslach et al., 1996). The MBI-HSS (MP) contains 22 questions: 5 assessing depersonalisation, 9 for emotional exhaustion and 8 for personal accomplishment. A score was given to each question of the MBI-HSS (MP), based on a frequency scale of 0 "never" to 6 "every day". Similar to previous studies, participants with a high score in the sections on depersonalisation (DP) (≥27) and/or emotional exhaustion (EE) (≥10) were considered to have burnout (Dyrbye et al., 2009; Ma et al., 2019; Shanafelt et al., 2010; Tawfik et al., 2018; West et al., 2009).

1.3.2.2 Depression

The standardised 2-item Primary Care Evaluation of Mental Disorders (2-item PRIME-MD) questionnaire, which had been shown to perform as well as longer questionnaires, was used to evaluate for symptoms of depression (Spitzer et al., 1994; Whooley et al., 1997). The 2-item PRIME-MD questionnaire was selected as it had been found to be a useful screening test for depression with high sensitivity, and is less time consuming. Any "Yes" answer to either of the following two questions would be considered a positive test: (1) "During the past month, have you often been bothered by feeling down, depressed, or hopeless?" or (2) "During the past month, have you often been bothered by little interest or pleasure in doing things?"

1.3.2.3 Self-perceived medical errors

In order to evaluate self-perceived medical errors that occurred over the past 1 month, similar to previous studies, two questions were asked with the purpose of finding out recent events that have been internalised as a major medical error by the clinician (Shanafelt et al., 2010; Tawfik et al., 2018; West et al., 2006). The first question in this section was "Are you concerned you have made any major medical errors in the last one month?" For those who answered "yes" to this question, the follow-up question was "Which of the following was the single greatest contributing factor in this particular error?" The response options for this follow-up question

will be: (a) system issue (e.g., someone misinterpreted an order); (b) your degree of fatigue; (c) lapse in your concentration; (d) lapse in judgment; (e) lack of knowledge; (f) your degree of stress/burnout; (g) other (free text).

1.3.2.4 Worry of COVID-19 transmission

Worry of COVID-19 transmission was asked as a single question, with responses graded using a numerical rating scale (NRS), "0" being not worried at all while a score of "10" signifies worst worry possible. The NRS has been validated to assess anxiety, and hence we adapted it to assess for worry of COVID-19 (Walawender et al., 2015). Cronbach alpha value for the questionnaire combining all these items was 0.791, indicating good internal consistency.

1.3.3 Statistical analysis

A minimum sample size of 78 clinicians in the Anaesthesiology and Intensive Care Department was required to have a confidence level of 99%, with a 5% margin of error, in order that the results obtained would accurately reflect the population of interest. Standard descriptive statistics were performed to summarise the demographic and baseline characteristic variables. Associations between variables were investigated using Pearson chi-square test, the independent samples t-test or the Mann-Whitney U test as appropriate. The normality of distribution for continuous variables was determined via the Shapiro-Wilk test. Multivariate logistic regression was conducted to determine factors that were independently associated with burnout and depression risk, by utilising the "Enter" selection method. The variables included in the model for burnout included number of calls per week, worry about COVID-19 and depression risk, while the model for depression risk included the same variables plus age factor. All tests were two-sided, and type 1 error probability alpha value was set at 0.05. All statistical analyses were performed with SPSS version 22.0 (SPSS Inc. Chicago, IL, USA).

1.4 Findings

A total of 88 questionnaires were distributed to all anaesthesiology clinicians in the Department of Anaesthesiology and Critical Care of Sungai Buloh Hospital, of which 85 (96.6%) were completed and returned (Tsan et al., 2020). The three anaesthesiologists who were not included declined to participate in the survey. Respondent characteristics are summarised in Table 1.1.

Table 1.1 Respondents' (anaesthesiologists') characteristics ($n = 85$)

Age (in years)[a]	*31 (28–36)*
Gender[a]	
Male	31 (36.5)
Female	54 (63.5)
Anaesthetic experience (in years)[a]	3 (1 – 8)
Anaesthesia training level[a]	
Medical officer	62 (72.9)
Consultant	23 (27.1)
Hours of work per week (in hours)[a]	
< 50	41 (48.2)
50–59	22 (25.9)
60–69	22 (25.9)
No of calls per week[a]	
0–1	26 (30.6)
≥ 2	59 (69.4)
Frequency of handling Covid-19 patients[a]	
Daily	80 (94.1)
Weekly or monthly	5 (5.9)
Marital status	
Yes	46 (54.1)
No	39 (45.9)
Parental status	
Yes	41 (48.2)
No	44 (51.8)
Alcohol status	
Yes	13 (15.3)
No	72 (84.7)
Smoking status	
Yes	3 (3.5)
No	82 (96.5)

Abbreviations: IQR, Interquartile range; *n*, number.

[a] Data previously published (Tsan et al., 2020).

1.4.1 Baseline characteristics

The median age of respondents was 31 years, and the majority were women (63.5%). Medical officers make up the majority of anaesthesiology clinicians who participated, with respondents having a median 3 years of anaesthetic work experience. During this pandemic, approximately 52% participants were working more than 50 hours per week, with the majority (69.4%) doing at least two calls per week. Up to 94.1% of those who participated handled COVID-19 patients daily (Tsan et al., 2020).

1.4.2 Outcome measures

Characteristics of respondents with respect to burnout, depression risk, worry of COVID-19 and self-perceived medical errors are summarised in Table 1.2.

Table 1.2 Burnout, depression risk, worry about COVID-19 and medical errors among respondents ($n = 85$)

Burnout indices[c]	
Emotional exhaustion[a]	
Mean (SD)	21.35 (9.9)
Low	29 (34.1)
Intermediate	29 (34.1)
High	27 (31.8)
Depersonalisation[b]	
Mean (SD)	8.74 (4.9)
Low	18 (21.2)
Intermediate	27 (31.8)
High	40 (47.1)
Personal accomplishment[c]	
Mean (SD)	29.2 (7.4)
Low	54 (63.5)
Intermediate	23 (27.1)
High	8 (9.4)
Burnout[c]	
Yes	47 (55.3)
No	38 (44.7)
Depression risk[e]	
Yes	57 (67.1)
No	28 (32.9)
Worry about Covid-19[d,e]	
Median (IQR)	7 (5–8)
Mild	11 ((12.9)
Moderate	40 (47.1)
Major	34 (40.0)
Medical errors	
Yes	37 (43.5)
No	48 (56.5)
Greatest contributing factor in medical error	
System issue	1 (2.2)
Fatigue	3 (6.7)
Lapse in concentration	10 (22.2)
Lapse in judgment	13 (28.9)
Lack of knowledge	14 (31.1)
Stress/burnout	3 (6.7)
PPE-related	1 (2.2)

(*Continued*)

Table 1.2 Burnout, depression risk, worry about COVID-19 and medical errors among respondents ($n = 85$) (*Continued*)

Results in *n* (%) unless stated otherwise.

Abbreviations: IQR, interquartile range; *n*, number; PPE, personal protective equipment; SD, standard deviation.

[a] Emotional exhaustion scoring: low < 18, intermediate 18–26, high ≥ 27. Higher score denotes higher degree of burnout.

[b] Depersonalisation scoring: low ≤ 4, intermediate 5–9, high ≥ 10. Higher score denotes higher degree of burnout.

[c] Personal accomplishment scoring: low ≤ 32, intermediate 33–39, high ≥ 40. Lower score denotes higher degree of burnout.

[d] Worry about Covid-19 stratified based on: Mild (scores 0–4), Moderate (scores 5–7), Major (scores 8–10).

[e] Data previously published (Tsan et al., 2020).

A total of 31.8% had high emotional exhaustion, 47.1% had high depersonalisation and 63.5% had low personal accomplishment. Overall, 55.3% were classified as burnout based on high scores in the emotional exhaustion and/or depersonalisation indices. Among all the respondents, 67.1% demonstrated depression risk. Up to 40% reported having major worry about COVID-19 amidst the pandemic (Tsan et al., 2020). The rates of self-perceived medical errors in the past 1 month during the COVID-19 situation was up to 43.5%, with the greatest contributing factors being lapse in judgment, lack of knowledge and lapse in concentration. Of note, one respondent reported committing a medical error due to the use of personal protective equipment.

1.4.3 Factors associated with burnout and depression

No demographic and social factors were significantly associated with burnout and depression risk. Burnout and depression risk were significantly associated with each other ($\chi^2 = 15.502$, $p < 0.001$) (Figure 1.1) (Tsan et al., 2020). Both burnout and depression risk were also associated with the number of calls per week ($\chi^2 = 4.293$, $p = 0.038$ and $\chi^2 = 4.935$, $p = 0.026$, respectively) (Figure 1.1) (Tsan et al., 2020).

In assessing the association of burnout and depression risk with worry of COVID-19, the Mann-Whitney test was utilised as the results indicated a non-normal distribution. Burnout and depression risk were significantly associated with worry of COVID-19 (Mann-Whitney U = 620, $p = 0.014$ and Mann-Whitney U = 586, $p = 0.044$, respectively) (Figure 1.2) (Tsan et al., 2020).

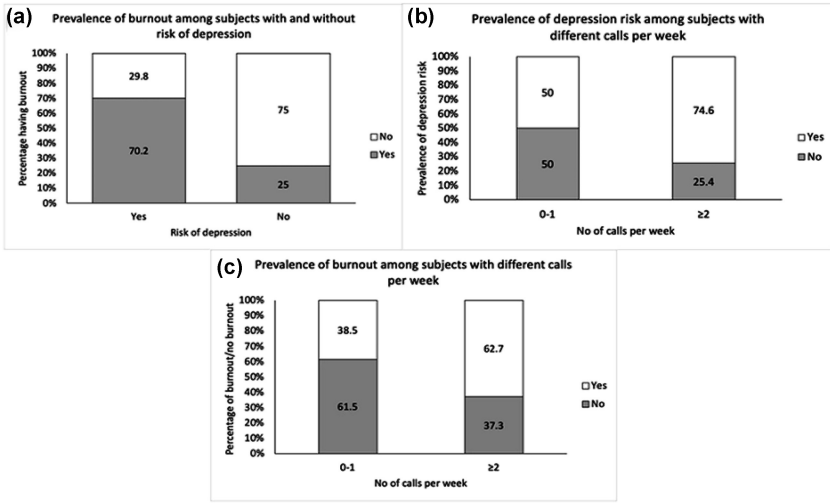

Figure 1.1 Factors associated with anaesthesiologists' burnout and depression risk: (a) burnout vs. depression risk ($p < 0.0001$); (b) number of calls vs. depression risk ($p = 0.026$) and (c) number of calls vs. burnout ($p = 0.038$).

Rates of self-perceived medical error was not significantly associated with both burnout and depression risk. In multivariate analysis, only burnout and depression were independently associated with each other, with respondents who are burnout more likely to be depressed and vice versa (Table 1.3).

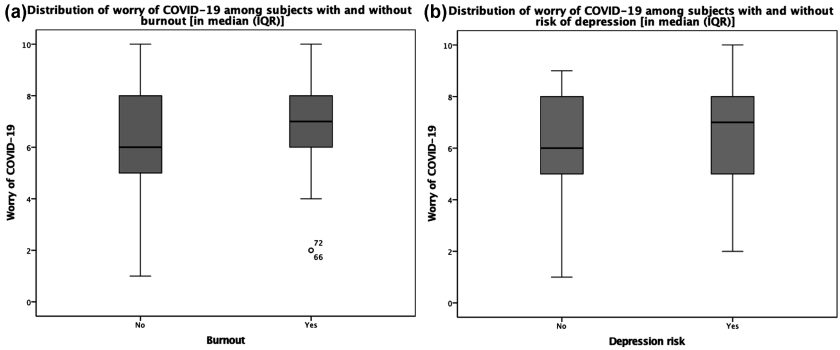

Figure 1.2 Association between anaesthesiologists' worry of COVID-19 with (a) burnout ($p = 0.014$) and (b) depression risk ($p = 0.044$).

Table 1.3 Multivariate logistic regression analysis for burnout and depression risk

	Burnout			
Factors	*Crude OR[a] (95% CI)*	*p value*	*Adjusted OR[a] (95% CI)*	*p value*
No of calls per week[b]	2.69 (1.04–6.96)	0.041	1.82 (0.62–5.33)	0.274
Worry of Covid-19[c]	1.32 (1.06–1.64)	0.015	1.24 (0.97–1.58)	0.090
Depression risk[d]	7.06 (2.53–19.70)	< 0.001	5.63 (1.95–16.30)	0.001
	Depression risk			
Factors	*Crude OR[a] (95% CI)*	*p value*	*Adjusted OR[a] (95% CI)*	*p value*
Age[c]	0.91 (0.83–0.997)	0.043	0.89 (0.79–1.00)	0.049
No of calls per week[b]	2.93 (1.12–7.71)	0.029	1.97 (0.66–5.90)	0.227
Worry of Covid-19[c]	1.27 (1.01–1.58)	0.037	1.26 (0.95–1.68)	0.110
Burnout[e]	7.06 (2.53–19.70)	< 0.001	4.95 (1.65–14.80)	0.004

Abbreviations: CI, confidence interval; No, number; OR, odds ratio.

[a] OR > 1 indicates higher risk of burnout/depression risk, OR < 1 indicates lower risk of burnout/depression risk.

[b] ≥ 2 calls per week compared to 0–1 call per week.

[c] Measured on continuous scale.

[d] Depression risk compared to no depression risk.

[e] Burnout compared to no burnout.

1.5 Conclusion

Our study is among the first to look at burnout and depression risk in the anaesthesiology fraternity during a worldwide pandemic. Our findings, though not unexpected, showed that a "parallel pandemic" of emotional harm to anaesthesiologists is not just a theoretical postulation, but is indeed the case during the COVID-19 pandemic (Dzau et al., 13 May 2020). We found that more than half of anaesthesiology clinicians in our survey have burnout and depression risk, with clinicians who experience burnout more likely to be depressed and vice versa. In addition, burnout and depression risk are associated with the number of calls per week, and also worry of COVID-19. Up to 40% of anaesthesiologists reported having major worry of being infected by COVID-19. The rates of medical errors during this pandemic is also worryingly high, with up to 43.5% reporting experiencing medical errors in this time of crisis. Our findings have been subsequently confirmed in a similar Italian study by Magnavita et al. (2020) where up to 71.1% of anaesthesiologists reported high work-related stress, 36.7% reported having insomnia, 27.8% had anxiety and 51.1% had depression.

1.5.1 Potential causes of high prevalence of burnout and depression

In view of the central role the anaesthesiology field is playing during this worldwide pandemic, the high prevalence of burnout and depression risk is not surprising (Magnavita et al., 2020; Sasangohar et al., 2020). Although surgical caseload in the operating theatre decreased, anaesthesiology clinicians' workload have not reduced, but may have instead increased as the number of COVID-19 patients increased. This is demonstrated in our survey when we found almost 70% of respondents had at least 2 calls per week, and almost 52% worked at least 50 hours per week. This compares well with the study by Magnavita et al. (2020), which found that 63% of anaesthesiologists reported increased or much increased workloads.

The role of the anaesthesiologists in the pandemic is to manage patients in acute and critical care, with special emphasis on airway management, ventilation support, oxygen therapy, hemodynamic management, analgesia and sedation (Zhang et al., 2020). As the clinician responsible for airway management, anaesthesiologists are among those at greatest risk of contracting COVID-19, due to the aerosolisation nature of intubation (Meng et al., 2020). In our centre during this pandemic, as is the case with many other hospitals in Malaysia, anaesthesiology clinicians form intubation teams for critically ill COVID-19 patients, attending to multiple patients in a day. Although the situation in Malaysia is not as dire as in China or in other more heavily affected countries, anaesthesiologists in Malaysia are central in the teams that have been called "coronavirus intubation team racing against death" (Huaxia, 2020; Zhang et al., 2020).

With this frequent exposure to COVID-19, the respondents in our survey reported a median score of 7 for worry about COVID-19 on a numerical rating scale of 10, and up to 40% reported major worry of this virus. This is a potential cause of the high prevalence of burnout and depression seen in this population. Also, the mental burden of facing increased patient morbidity and mortality due to COVID-19 in critically ill patients is substantial, and would also contribute to burnout and depression risk (Kerlin et al., 2020; Moss et al., 2016). Our survey demonstrated a snapshot of the unique and dire circumstances anaesthesiologists in Malaysia find themselves in amidst the COVID-19 pandemic, and to a certain extent by other healthcare practitioners at the frontlines of the battle against the virus.

1.5.2 Impact on medical errors

At the turn of the century, there has been an exponential increase in awareness of the impact of medical error and patient safety. In our survey,

Psychological distress among healthcare professionals at the frontlines

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